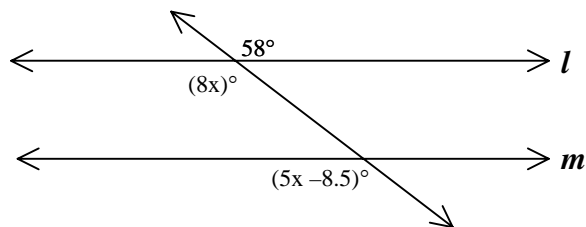


1. State whether the statements are always true (A), sometimes true (S), or never true (N).
  - a. Two parallel lines are coplanar.
  - b. The measure of an exterior angle of a triangle is greater than the measure of any interior angle.
  - c. Two isosceles triangles with congruent bases are congruent.
  - d. All diagonals of a regular pentagon are congruent.
  - e. If the number of sides of a polygon is doubled, then the sum of the exterior angles is doubled.
  - f. If two lines are cut by a transversal, then the alternate interior angles are congruent.
  - g. When there is a transversal of two lines, the three lines are coplanar.
  - h. An equilateral triangle is a right triangle.
  - i. Two lines that have no point in common are parallel.
  - j. If the measure of one angle of a triangle is greater than the measure of a second angle, then the side opposite the larger angle is longer than the side opposite the smaller angle.

2. Complete the following table for a regular polygon.

Number of sides	Number of diagonals	Measure of each interior angle	Measure of each exterior angle
6			
	20		
		$144^\circ$	
			$72^\circ$

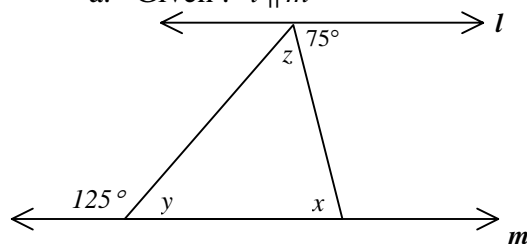
3. Given:



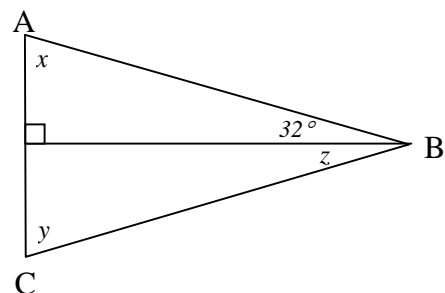
Find  $x$ . Are  $l$  and  $m$  parallel? Why or why not?

4. Find  $x$ ,  $y$ , and  $z$ .

- a. Given:  $l \parallel m$



- b. Given:  $\triangle ABC$  with  $\overline{AB} \cong \overline{BC}$



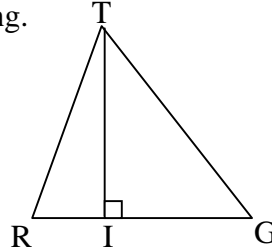
5. Construct using compass and straight edge:
- The three medians of a scalene triangle.
  - The three altitudes of an isosceles triangle.
  - The three perpendicular bisectors of a right triangle.

6. Prove by using the indirect method of proving.

a. Given:  $\overline{TI} \perp \overline{RG}$ ,  $\overline{TR} \neq \overline{TG}$

Prove:  $\overline{TI}$  does not bisect  $\angle RTG$

(This proves that an altitude of a scalene triangle is not an angle bisector.)

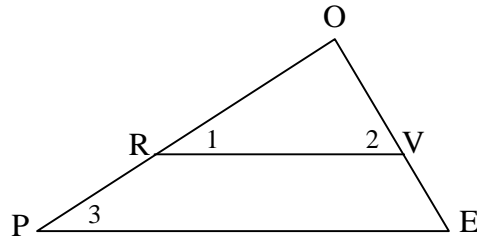


- b. The perpendicular bisector of a line segment is unique.

7. Given:  $\angle 1$  is complementary to  $\angle 2$

$\angle 2$  is complementary to  $\angle 3$

Prove:  $\overline{RV} \parallel \overline{PE}$

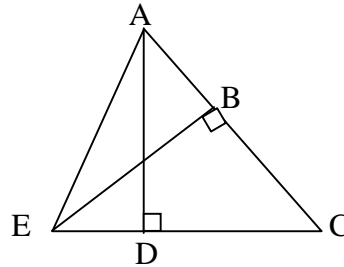


8. Given:  $\overline{BE}$  is altitude to  $\overline{AC}$

$\overline{AD}$  is altitude to  $\overline{CE}$

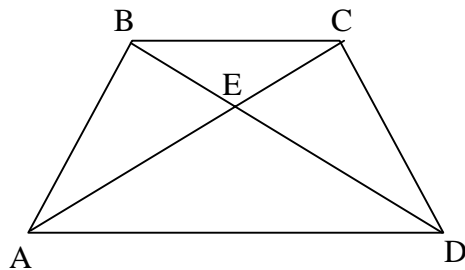
$\overline{BC} \cong \overline{CD}$

Prove:  $\overline{BE} \cong \overline{AD}$



9. Given:  $\overline{AB} \cong \overline{CD}$ ,  $\angle BAD \cong \angle CDA$

Prove:  $\triangle AED$  is isosceles

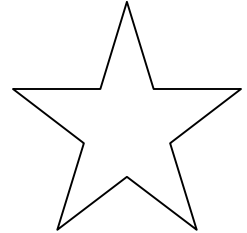
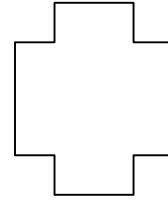
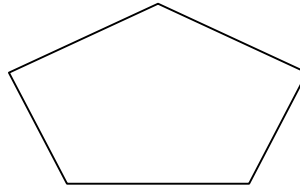
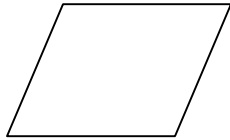


10. Provide a drawing, given, prove and two-column proof for the given statement:  
 “The median to the base of an isosceles triangle is the altitude to the base of the triangle.”

11. Given the following letters:

**N A M E Z Y O U T H**

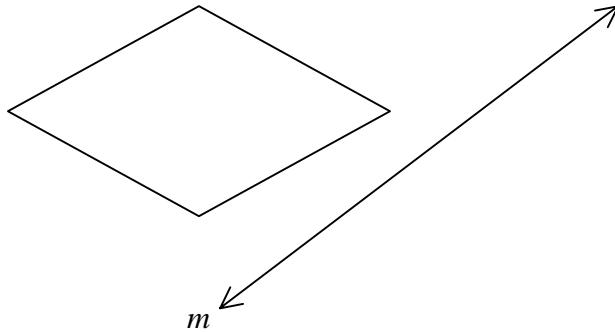
- Which letters have symmetry with respect to a line?
- Which letters have symmetry with respect to a point?



12.

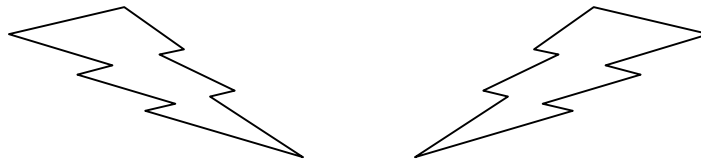
- Which geometric figures have symmetry with respect to a line?
- Which geometric figures have symmetry with respect to a point?

13. Complete the figure so that it reflects across line  $m$ .



14. Which type of transformation (slide, reflection, rotation) is illustrated?

a.



b.



c.

